SimaPro Craft 10.1

What's new?

SimaPro

Title: SimaPro Craft 10.1 What's new?

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Version: 1.0

Date: February 2025

About SimaPro

SimaPro was developed by PRé with the goal of making sustainability a fact-based endeavor. PRé has been a leading voice in sustainability metrics and life cycle thinking development for nearly 30 years, pioneering the field of environmental and social impact assessment. We develop tools that help you create value and drive sustainable change.

PRé
Fact-based sustainability

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1 Introduction

This document describes the changes in the SimaPro Craft (formerly known as SimaPro desktop) 10.1. This new version brings significant performance improvements, useful new features, and an enhanced user interface – all geared to make your SimaPro experience even better. In addition, we have added two new data libraries as well as three new impact assessment methods.

We hope you have a smooth experience updating to SimaPro 10.1 as you explore the new features improvements, and data updates. Feel free to reach out to us for feedback and further suggestions.

2 Software updates

2.1 New features and improvements

With the release of SimaPro Craft 10.1, we focused on improving the speed and performance in various areas. To do so, our developers first have updated SimaPro to the latest version of the Delphi programming language, and similarly updated a range of components used in SimaPro.

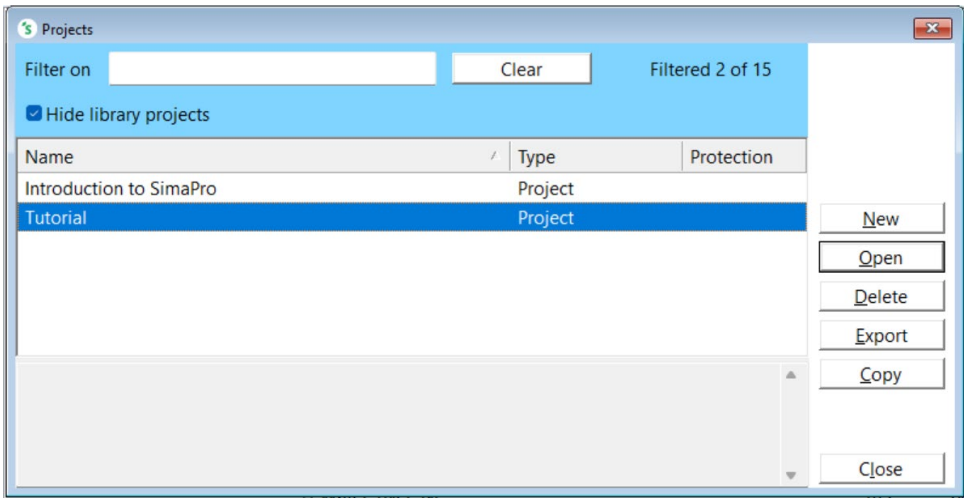
Once you update your software, you will notice the following operations running much faster than you have been used to in SimaPro 9:

- Carrying out calculations
- Opening and closing databases and projects
- Importing and exporting SimaPro databases via single-user access
- Loading processes and parameters

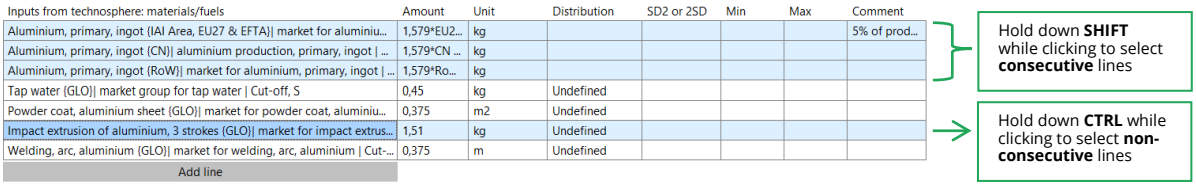
In addition, a number of new features and enhancements are introduced, including:

- Real-time synchronization for multi-users
  When working together with other users in the same project, changes made by one user will be instantly visible to other users after saving. This includes all process-level changes, such as creating a new process, copying a process, editing a process, as well as changes to parameters (for process, project, and database parameters).

- Project filtering and Hide library projects
  In the Open Project window, you can now filter on projects with an option to hide library projects (only projects are displayed by default). This feature is especially useful if you have many projects. (Library) projects are also now sorted alphabetically by default for an easier search.



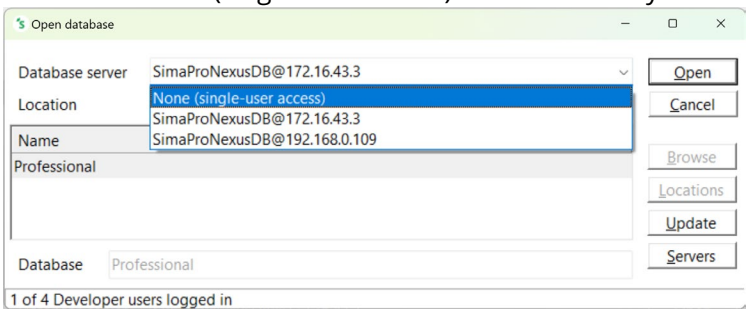
- Enhanced copying and deleting behaviour – you can now copy multiple consecutive lines using SHIFT + mouse click and copy non-consecutive lines with CTRL + mouse click or arrow keys, within SimaPro and to an external document. Similarly, you can delete multiple lines using the same methods.



- Improvements in identifying errors in parameters. If an error is found, the error messages are now more understandable and can be copied from SimaPro (CTRL + C) and pasted into Excel/Word (CTRL + V) for further review. You can select all entries at once (using CTRL + A) or do several selections by using CTRL or SHIFT, as in the previous point.

- Several updates to the user interface to ensure consistency and a more user-friendly experience, including:
    - Process filter is now moved to top for easier access
    - Improvement in displaying scientific notation
    - When browsing to another database, you can now copy and paste the database directories directly in File Explorer path. Note: this is only possible for single-user and when accessing the database via "None (single-user access") for multi-user.

- When opening a database using the multi-user version, we changed the term "local server" to "None (single-user access)" for more clarity.



- Improved error reporting – when error occurs, SimaPro now provides options to report and send details directly from the error window. It can take a screenshot of the error. which you can adjust and edit when necessary, making it easier to report issues.
- Improved license deactivation
- Optimized keyboard shortcuts for smoother navigation throughout the software
- Updated Help File (under Help > SimaPro Help menu or press F1) to reflect the latest SimaPro version, providing comprehensive guidance on SimaPro features and functionalities

2.2 Bug fixes

SimaPro Craft 10.1 also includes some bug fixes. These include

- Checking the allocation total when it contains parameters or expressions; SimaPro 10 gives a warning when it doesn't add up to 100%
- Opening a method in view mode is now greyed out to indicate that it is not editable
- Importing users in the multi-user via Excel will now also create new projects
- Bug fix in the external link manager function
- Bug fix in the silent installation, where now it is possible to also do a silent installation of the SimaPro database server; in addition to improvements in the (very) silent uninstall
- Resolved the known issue where x-axis was missing when displaying uncertainty results in distribution graph
- Fixed navigation issue to error source. Previously, when there are calculation errors due to invalid expressions in project and database parameters, clicking "Go-to" didn't always take you to the right entry. This has now been fixed
- Bug fix in results discrepancies between Analyze results and Network for avoided products

2.3 Discontinued features

A number of features have been discontinued starting from SimaPro Craft 10.1 due to low usability and impact. These are:

- Wizards
- Unit conversions under General data (as this was only needed for Wizards)
- Images under General data as well as the option to show process images in Network
- Sample size under Edit pedigree menu (this is no longer used by ecoinvent v3)

2.4 Known issues

Despite the significant improvements and new features, there are a few known issues that we are currently working on:

- Language support
  Some texts, especially warnings and error messages may not yet be (correctly) translated to the chosen language in SimaPro. The text will be shown in English instead.

- Cropped texts in languages other than English
  Some texts may appear cropped in certain languages other than English, either within buttons or elsewhere in the interface. We are working on resolving this to ensure all texts are displayed fully. You can try to reduce the font size or adjust your screen resolution as a workaround in the meantime.

- Wrong output text in certain fields, such as:
  - When deleting multi-output processes, SimaPro shows the wrong number of processes that will be deleted
  - When allocation exceeded 100% in multi-output processes, double percentage (%%) signs are shown

  We are currently working on resolving this.

- "Show indicator as percentage" not updating all windows
  When selecting "Show indicator as percentage" in Network or Tree, only the value in Network or Tree is updated but the "Show Input and Output Flows" window does not reflect the change. We are aware of this issue and are working on a fix.

3 Data library changes

There are two libraries introduced with this release: USEEIO and USLCI+. Both are part of Federal LCA Commons (FLCAC)[1], which is an interagency community of practice for life cycle assessment research methods. The FLCAC collaborates to share expertise and methods to move toward common federal data modeling conventions and make federal data sets freely available through a web-based data repository.

3.1 USEEIO

The USEEIO library in SimaPro is part Federal LCA Commons (FLCAC). It is based on U.S. Environmentally-Extended Input-Output Model v2.0. This is an environmental-economic model of a complete set of US goods and services that can be used for life cycle assessment, footprinting, national prioritization, and related applications.

US Environmentally-Extended Input-Output (USEEIO) models are combined economic-environmental models. The models use data on inputs to and outputs from industries and their final consumption and value added in the form of input-output tables from the Bureau of Economic Analysis (BEA). These tables are paired with environmental data on resource use and releases of pollutants from various public sources in the form of satellite tables, as well as indicators of potential environmental and economic impact, using standard algorithms from input-output analysis.

The reference unit of all processes is 1 USD (2012) of the good or service. The technosphere inputs are based on the US BEA detailed input-output tables for 2012. The IO tables are combined to develop a commodity-by-commodity model based on the industry-technology assumption, which assumes all commodities produced by a given industry have the same input structure, but that multiple industries can produce the same commodity. Thus, model

[1] https://www.lcacommons.gov/

technosphere flows represent commodity outputs (and not industry outputs) from other processes in the model. There are no by-products included in these processes. All commodity production is based on US-conditions, despite in reality that some goods and services are produced overseas, as USEEIO v2.0.1-411 is a single-region IO model.

The USEEIO library implemented in SimaPro was retrieved from its repository in Federal LCA Commons[2]. The specific version of the USEEIO model used is USEEIO v2.0.1-411. This form of the model is a life cycle inventory model consisting of unit processes for each of the 411 commodities which results in a comprehensive (as the 411 commodities encompass all US goods and services) and complete (no gaps or cutoffs do to the complete and balanced nature of IO-based models) life cycle inventory database of the US.

3.2 USLCI+

USLCI is a library implemented in SimaPro which combines two repositories of the Federal LCA Commons (FLCAC): the USLCI[3] plus U.S. Electricity Baseline[4], which will replace the older USLCI library.

The U.S. Life Cycle Inventory (USLCI) Database v.1.2024-10-0 is a publicly available database that allows users to objectively review and compare analysis results that are based on similar data collection and analysis methods. Library updated in December 2024. The USLCI database has more than 600 process LCIs ranging from fuels combustion, transport, metals, chemicals, resins, paper, etc. to electronics and building materials. This database provides individual gate-to-gate, cradle-to-gate, and cradle-to-grave accounting of the energy and material flows into and out of the environment that are associated with producing a material, component, or assembly in the U.S.

USLCI + is a major update to the previous USLCI library, which is based on a much earlier data version from the Federal LCA Commons.

Major updates in the new release of USLCI + (which covers USLCI 2024 Q3 and electricity baseline v6 of the Federal LCA Commons) include (see here for full details):

1. Nomenclature Standardization
    - Implemented the Federal Elementary Flow List (FEDEFL)
    - Regular updates of US electricity data
    - Improved interoperability of Federal LCA data, especially between the electricity datasets and other sectors
2. Corrections (non-exhaustive list)
    - Corrections for liquid fuels and electricity

[2] https://www.lcacommons.gov/lca-collaboration/US_Environmental_Protection_Agency/USEEIO_v2/datasets
[3] https://www.lcacommons.gov/lca-collaboration/National_Renewable_Energy_Laboratory/USLCI_Database_Public/datasets
[4] https://www.lcacommons.gov/lca-collaboration/Federal_LCA_Commons/US_electricity_baseline/datasets

- Fixed volume and energy unit conversions
- Addressed measurement inconsistencies across datasets
- Corrected biodiesel allocation errors
- Improved flow and process name consistency
- Removal of duplicate identifiers

3. Specific Dataset Additions (non exhaustive list)
    - Added asphalt binder processes
    - Updated plastic resin and chemical process data
    - Improved electricity grid mix representations
    - Steel dataset overhaul

Recommendations for users

- Please be advised that the US LCI library contains "dummy" processes. It is advised to use proxy data from other sources to bridge these gaps.
- USLCI and USLCI+ datasets are separated by ten years of data development from NREL, the USEPA and ERG, and have been converted by a different methodology and set of tools, therefore results from the two libraries may differ significantly
- A process replacement file can be used to transition many of the processes in USLCI to their counterparts in USLCI+ where they exist. More info on this replacement file can be found in the relevant update instructions.

The data for this project were critically reviewed following the project data review protocol. U.S. Life Cycle Inventory Database." (2012). National Renewable Energy Laboratory, 2012. Accessed November 19, 2012: https://www.lcacommons.gov/nrel/search

4 Changes to impact assessment methods

4.1 New | Environmental prices 2023

The Environmental Prices method assigns monetary values to the environmental impacts caused by human activities. It translates various environmental effects, such as greenhouse gas emissions, air pollution, and resource depletion, into economic costs, based on damage to ecosystems, human health, and resource availability. The method provides a single, monetary-based metric that can be used in life cycle assessments to compare different impacts; in this implementation, the unit is Euro-2021.

It helps decision-makers prioritize environmental actions by quantifying external costs that are often neglected in market prices. This approach supports sustainability by integrating environmental costs into economic evaluations.

This collection of weighting sets is implemented in SimaPro as three different methods, which are

- Environmental Prices (H)

- Environmental Prices (I)
- Environmental Prices (E).

Each of these methods corresponds to a ReCiPe 2016 method, from which the substance lists are adopted.

The Handbook of Environmental Prices (Handboek Milieuprijzen 2023) also gives weighting information for an additional impact category, NO_2 addition, which was not implemented in these methods, but can be adapted by users if required.

4.2 New | MarILCA

The MarILCA method developed by Corella-Puertas et al. offers a framework for quantifying the environmental impact of microplastic emissions in aquatic ecosystems. It integrates data on micro- and nanoplastic toxicity to aquatic organisms and introduces fate factors for various polymer types, shapes, and sizes. This methodology updates the life cycle assessment (LCA) approach by addressing gaps in understanding the physical effects of microplastics on marine biota. It is designed as a practical tool for environmental decision-makers to assess the sustainability of plastic use and alternatives

The impact assessment in the MarILCA framework measures microplastic effects using two key metrics: exposure and effect factors (EEF) and fate factors (FF). The EEF is expressed in terms of impacts per unit mass of microplastic (kg), and FF evaluates the likelihood of particles reaching aquatic environments based on polymer degradation rates and transport pathways. These units allow practitioners to estimate how much damage a given amount of microplastic can cause to aquatic life, based on real-world environmental behavior.

Quantified Polymers:

- HDPE (High-density polyethylene)
- LDPE (Low-density polyethylene)
- Nylon (PA)
- PET (Polyethylene terephthalate)
- PHA (Polyhydroxyalkanoates)
- PLA (Polylactic acid)
- PP (Polypropylene)
- PS (Polystyrene)
- PVC (Polyvinyl chloride)

Quantified Shapes:

- Microplastic beads
- Fragments
- Fibers

Quantified Sizes:

- 1 µm
- 10 µm
- 100 µm
- 1000 µm

For the damage assessment, the model calculates physical impacts like ingestion rates and mortality, translating these into risk factors for specific organisms and ecosystems. By modeling microplastic interactions with species over time, the MarILCA framework predicts broader ecological consequences, linking microplastic quantities to ecosystem damage.

4.3 New | TRACI 2.2

The Tool for the Reduction and Assessment of Chemical and other environmental Impacts (TRACI) is a midpoint oriented LCIA methodology developed by the U.S. Environmental Protection Agency specifically for the US using input parameters consistent with US locations.

TRACI 2.2 facilitates the characterization of environmental stressors that have potential effects, including ozone depletion, global warming, tropospheric ozone (smog) formation, acidification, human health cancer effects, human health non-cancer effects, respiratory effects, ecotoxicity, freshwater eutrophication and marine eutrophication. The method includes characterization and normalization.

The differences between TRACI 2.1 and TRACI 2.2 include the following:

- Ozone depletion: The CF for Methane, monochloro-, R-40 has been updated from 0.2 to 0.02 kg CFC-11 eq/kg.
- The Fossil fuel depletion category has been removed.
- The Eutrophication category has been replaced by the categories Freshwater eutrophication and Marine eutrophication, which contain regionalized characterization factors.

Please note that the TRACI 2.1 method has been moved to the Superseded section of the Methods library.

4.4 Updates of existing methods

A number of methods have been updated:

- Characterization factors for new geographies of nitrogen- and phosphorus-related substances have been added in all (applicable) methods
- Mappings of nitrogen and phosphorus to nitrogen- and phosphorus-related substances have been aligned across all (applicable) methods for eutrophication impact categories
- Environmental footprint 3.1 (adapted) and EN 15804 + A2 (adapted): Ecotoxicity, freshwater and Ecotoxicity, freshwater – organics both of which were originally split into parts 1 and 2 have now been combined in a single impact category.

- ReCiPe 2016: Regionalized characterization factors for COD (Chemical Oxygen Demand) have been added to Freshwater eutrophication

For more details on the changes, please see the comment section of the individual methods.

Finally, the TRACI 2.1 and Environmental Prices methods have been moved to the Superseded section. These will no longer be maintained as newer versions are available – users are advised not to use these methods. Documentation of superseded methods can still be found here.

5 Contact us

We value your feedback and would love to hear your opinion on this latest SimaPro release. Please feel free to reach out for any questions or suggestions.

- In SimaPro: Help > Contact SimaPro Support (recommended)
- SimaPro Help Center contact form: https://support.simapro.com/s/contactsupport
- E-mail: support@simapro.com
- Phone: +31 33 4504010